

10/084,860

Claim 1 (amended): A [single step] process for synthesis of nanoparticles of phase pure ceramic oxides of a multi-component system comprising [one] two or more metal ions, said process comprising[.,]:

- (a) preparing a solution containing the metal ions [in stoichiometric ratio] by dissolving their [soluble] metal salts in an organic solvent or in water[.,];
- (b) preparing a precursor by complexing the metal ions with a complexing agent while keeping the ratio of the charges of the complexing agent [acid] to the charges of the metal ions as unity wherein said precursor is formed in the solution;
- (c) [adjusting the nitrate/ammonia content in the system] adding nitric acid and ammonia; nitric acid and ammonium hydroxide; or ammonium nitrate to the solution to adjust the nitrate and ammonia content of the solution; and
- (d) heating the [system] solution formed in step (c) from room temperature to 250-300°C to produce a foam which subsequently ignites to provide a combustion product comprising the nanoparticles.

Claim 2 (amended): [A] The process as claimed in claim 1 wherein the ceramic oxide produced [desired oxide] contains [(a) one cation selected from the group comprising  $\text{Al}_2\text{O}_3$ ,  $\text{ZrO}_2$ ,  $\text{TiO}_2$ ,  $\text{CeO}_2$ ,  $\text{HfO}_2$ ,  $\text{MgO}$ ,  $\text{SiO}_2$ , (b)] (a) two cations of the general formula  $\text{ABO}_3$ , wherein A is Si, Al, Y or Lanthanides, B is Ba, Sr, Ca, Mg or Fe; or with general formula  $\text{AlM}_2\text{O}_5$ , where M = Ti, Zr or Hf; or with general formula  $\text{Al}_2\text{NO}_4$ , where N = Mg, Ca, Sr, Ba, Zn[.,]; [(c)] (b) three cations with the general formula  $\text{A}(\text{B}_{0.5}\text{B}'_{0.5})\text{O}_6$  or  $\text{A}_2(\text{BB}')\text{O}_6$ , where A is Ba, Sr, Ca or Mg, B is Zr, Hf, Sb or Sn, B' is Al, Y or

Lanthanides, [(d)] (c) four cations with general formula (AA')(BB')O<sub>6</sub>, where A and A' are B, Sr, Ca or Mg, B is Zr, Hf, Sb or Sn, B' is Al, Y or Lanthanides.

Claim 3 (amended): [A] The process as claimed in claim 1 wherein the complexing agent is selected from the group [comprising] consisting of citric acid, EDTA and oxalic acid.

Claim 4 (amended): [A] The process as claimed in claim 1 wherein the metal salts are dissolved in an organic solvent and the nitrate and ammonia [nitrate/ammonia] content in the solution [system] is adjusted by addition of ammonium nitrate [where the precursor is formed in an organic solvent].

Claim 5 (amended): [A] The process as claimed in claim 1 wherein the metal salts are dissolved in water and the nitrate and ammonia [nitrate/ammonia] content in the solution [system] is adjusted by the addition of nitric acid and ammonia or ammonium nitrate [where the precursor complex is formed in water].

Cancel claim 6.

Claim 7 (amended): [A] The process as claimed in claim 1 wherein the metal salts are selected from the group [comprising] consisting of alkoxides, nitrate, chlorides, sulphates, oxychlorides or any other salts that are soluble in an organic solvent.

Claim 8 (amended): [A] The process as claimed in claim 1 wherein the metal salts are water insoluble [oxides and carbonates of the desired metal] and are dissolved in suitable acids prior to [use] step (a).

Claim 9 (amended): [A] The process as claimed in claim 1 wherein the organic solvent is selected from the group comprising of alcohols, trichloroethylene, and any other solvents capable of dissolving the complexing agent and [any one of] the metal salts [needed to form the desired oxide].

Claim 10 (amended): [A] The process as claimed in claim 9 wherein the alcohol is selected from the group [comprising] consisting of ethyl alcohol, methyl alcohol and isopropyl alcohol.

Cancel claim 11.

Claim 12 (amended): [A] The process as claimed in claim 11 wherein the heating is done on a sand bath or hot plate [bath/hot plate].

Claim 13 (new): The process as claimed in claim 8 wherein the metal salts are oxides or carbonate salts.